OFFICE OF CONSERVATION
STATE OF LOUISIANA

IN RE: GROUND WATER
MANAGEMENT COMMISSION

REPORT OF MEETING
HELD AT
BATON ROUGE, LOUISIANA
MAY 29, 2002

OFFICE OF CONSERVATION
STATE OF LOUISIANA

IN RE: GROUND WATER
MANAGEMENT COMMISSION

Report of the public meeting held by the Ground Water Management Commission, State of Louisiana, on May 29, 2002, in Baton Rouge, Louisiana.

COMMISSION MEMBERS IN ATTENDANCE:
Karen Gautreaux, Chairman
Phil Boudreaux, Commissioner of Conservation
Zahir "Bo" Bolourchi, DOTD - Water Resources
George Cardwell, Capital Area Ground Water Commission
Dale Givens, Secretary, DEQ
Fulbert Leon Namwamba, Geologist
Brad Spicer, Agriculture & Forestry
Linda Zaunbrecher, Farm Bureau Member
Mike Taylor, Department of Economic Development
Dean Lowe, Department of Health and Hospitals

AGENDA

I. Public Hearing on Permanent Rule: Title 33; Environmental Quality; Part IX, Water Quality; Subpart 2. Groundwater Management; Chapters 31 - 35.

II. Ground Water Management Commission Call to Order - Karen Gautreaux, Governor's Office.

III. Update on Ground Water Management Staff Activities, Anthony Duplechin, Jr. - Office of Conservation.

IV. Consultant Report; Draft of Part 1 (C.H. Fenstermaker.)

V. Commission Question and Comment.

VI. Advisory Task Force Question and Comment.

VII. Commission consideration of the extension of the current contract.

VIII. Ground Water Management Advisory Task Force Committee Reports.

IX. Commission Question and Comment.

X. Old Business: 1. Finalize the language of the brochures, 2. Public Supply and Economic Development Committee recommendations, 3. Outreach Committee Strategy for Public Information, 4. Delegation of CGWA application completeness review determination to staff.

XI. New Business.

COMMISSIONER GAUTREAUX:

The first part -- let me go ahead and let the commissioners introduce themselves. Dr. Bahr is in New Orleans today. Let's go ahead and get started. Linda?

COMMISSIONER ZAUNBRECHER:

Linda Zaunbrecher with Louisiana Farm Bureau.

COMMISSIONER CARDWELL:

George Cardwell.

COMMISSIONER BOLOURCHI:

Bo Bolourchi, DOTD.

COMMISSIONER BOUDREAUX:

Phil Boudreaux, Department of Natural Resources.

COMMISSIONER GAUTREAUX:

Karen Gautreaux, Governor Foster's Office.

COMMISSIONER GIVENS:

Dale Givens, Department of Environmental Quality.

COMMISSIONER NAMWAMBA:

Fulbert Namwamba, geologist/engineer.

COMMISSIONER TAYLOR:

Mike Taylor, Department of Economic Development.

COMMISSIONER SPICER:

Brad Spicer, Louisiana Department of Agriculture and Forestry.

COMMISSIONER GAUTREAUX:

Thank you. Our agenda today, the first item is actually a hearing on our permanent rule for a critical groundwater area designation.

(TRANSCRIPT UNDER SEPARATE COVER)

COMMISSIONER GAUTREAUX:

Now we will begin the regular meeting of the Ground Water Management Commission, the non-hearing portion, and the first item on the agenda, since our Commissioners have introduced themselves, is the update on Ground Water Management staff activities. Tony.

MR. DUPLECHIN:

Thank you, Karen. The main focus of staff activities since our last meeting on the 15th of this month has been to review the submittal by C.H. Fenstermaker and Associates, and to sort of correlate the different comments that we have received from the Commission and Task Force on that, and disseminate that information to the Commissioners and the Task Force. I did attend the meeting in West Monroe on the 16th of this month, at which Meyer, Meyer, LaCroix & Hixson, who is the consultant for the Sparta Commission, presented their recommendations as to alternate water sources that will go along with the impending application -- or the yet to be received application for declaring part of the Sparta a critical groundwater area. On the 17th of May a notice of intent was published in the Ruston morning paper signifying the Sparta Commission's intent of filing such an application.

We've made a few changes to the Website, the main one being we have put the different brochures that we

had passed out last time on the Website under heading of ?Draft Publications? so that people could review them if they did not have a copy, and we didn't have enough copies for everybody last time. That ends my report.

COMMISSIONER GAUTREAUX:

Thank you. Any comments or questions for Tony from the Commissioners? (No response.) Then we will move on to our -- I guess what we will do, we'll let the Commission members, since this is tied up with the consultant's report, we did receive some comments and questions on the draft, and if there are any additional questions or comments that can be made prior to the presentation. And we will certainly ask again following the presentation. And I believe last time you encouraged questions during the presentation. Fulbert?

COMMISSIONER NAMWAMBA:

Just an inquiry. Since my comments at the last meeting were verbal, and I assume they were on the record, then I had the discussion with the staff of C.H. Fenstermaker, I just wanted to make sure whether they put my comments on record or whether they still -- whether the rules require that they be written comments.

COMMISSIONER GAUTREAUX:

I believe if I'm correct, Tony, we did actually provide a transcript as part of the comments, and also your conversations. So I don't think you need to provide another set, unless you feel like there's some clarification that's necessary.

MR. DUPLECHIN:

Yes, I did copy directly from the transcript.

COMMISSIONER GAUTREAUX:

What we could do is, since they're going to be a few more minutes, go down to the Ground Water Management Advisory Task Force committee reports. How many committees are going to make a report? I know Mr. Owen's committee is going to make a report. Tim with Outreach. Two. Mr. Owen, you want to come up.

MR. OWEN:

Madame Chairman, I'm Eugene Owen. I am a member of the Advisory Task Force and Chairman of the Public Supply Committee of the Task Force, and also Chairman of the Economic Development Committee. And the report that I have to present to you represents a report which was approved today by the Task Force by a majority but not a unanimous vote. It contains recommendations to this Commission.

The Advisory -- the committees of the Advisory Task Force considered a means of developing a plan which might be an alternative to the use of groundwater in certain conditions under those conditions where an aquifer supplying groundwater used jointly by industry and by public supply might tend to become critical either now or in the immediate future. In such a case the committees recognize and the Task Force recognizes that the legal access, legal right and the economic

interest of all parties having a vested interest in the use of that groundwater is equal, is exactly the same. Industry has the same right to use that water for a useful purpose as public supply does.

The public interest, however, in the use of that groundwater is not the same because the usefulness of the groundwater in many cases is much greater to public for public supply than it is to industry for its industrial supply. I can give you two reasons why this might be true. One of them is because the difficulty with modern water treatment methods for treating water used as public supply is very difficult to achieve a complete removal of both -- or deactivation of both viruses and some microorganisms. As a consequence, few, if any, of these microbiological problems are of interest to industry. Industry is interested in the overall quality of the water.

Additionally, there are trace pesticides in some surface supplies that are very difficult to remove by conventional water treatment facilities. And this in turn makes the usefulness of the ground water for public supply much greater than the usefulness of the same supply to industry for industrial purposes, but with the same economic interest, with the same legal entitlement to use that water. The committee considered ways of breaking this dilemma of waiting until the groundwater, which generally is less expensive, is all used up before going to an alternative source of public supply where the alternative use was only an economic issue.

We identified by example a way of developing an alternative industrial supply in certain areas where both ground water and industrial water -- both ground water and surface water are available for industrial usage. The key to this would be to -- since the industrial water would then become more expensive because of the necessity for withdrawing and treating the industrial water, how do you offset the difference in cost without incurring a penalty to the using industry. It would seem to us that at least some consideration of development and funding of an alternate supply through a groundwater severance tax might be a key to developing just such an offset which would serve to preserve the public supply without economic penalty to industry, and would preserve industrial access to the surface water, which we have in many areas in the greatest plenty.

And so we considered an example of constructing, for example, here in the Baton Rouge area, a water treatment facility which would supply about 85 percent of the industrial usage and have this paid for with the -- the initial capital cost of this supply would be paid for with a severance tax through the issue of public bonds and would be -- serve to amortize the issue. The operation of the water treatment facilities would be about the same as the cost of extracting the ground water so that the operating costs should remain about the same. And the real key here is offsetting

the cost.

There is no one single answer. There is perhaps no best answer. It may vary from place to place in the state, but the fact of the matter is that this state is blessed with an abundant supply of both ground water in most areas, and an abundant supply of surface water in most areas. And the problem is how to overcome this narrow economic difference that will tend to preserve the greater value resource, which is the ground water for public supply, in a way that it can be utilized the longest without incurring a penalty, an economic penalty to the using industry.

And so it is the recommendation that this Commission authorize and undertake a detailed feasibility study of the cost of constructing and operating surface water treatment and transmission facilities for the purpose of supplementing or replacing groundwater usage in areas of critical or potentially critical groundwater usage. That is the first recommendation. And that undertaking to make a feasibility study would be solely for the purpose of identifying the considerations which are included in recommendation No. 2.

Recommendation No. 2 is that the Commission identify and seek all legislative authority necessary on a standby basis to enable the creation, financing, and operation of such governmental authority as may be required to successfully implement such alternative surface water supplies as replacement or supplement for existing groundwater supplies. In other words, the recommendation of the Task Force that I bring to you today is that you consider in sufficient detail the feasibility of developing an alternate supply of surface water which would replace existing usage of ground water, and then consider what legislative authorities, what policies and what procedures need to be in place to enable that to be implemented when the time comes.

That is our recommendation.

COMMISSIONER GAUTREAUX:

Do we have any questions or comments from our Commissioners? Dale?

COMMISSIONER GIVENS:

Gene, did y'all look at the old Sabine River project, the diversion of pumping the Sabine River water in Lake Charles and --

MR. OWEN:

We did not. I am aware, and I see Ms. Zaunbrecher about to ask me a question too, so I know, I think I know what the question is. We looked only at a single example, which was the industrial situation here in Baton Rouge, simply because that was useful in pointing out the fact that some of the legislative authority which might be necessary to accomplish this alternative supply is absent or not known to me to be existing. And by that I mean the general enabling authority in this state to treat and sell surface water by a public authority. There is no authorizing legislation that

I'm aware of to give that public authority the right of immanent domain, and it would have to have the right of immanent domain to gain access in some cases to a source of industrial supply.

I am aware in the Sabine River item that you mentioned that that was for both industrial and to some extent I think for agricultural purposes as well, and nothing in our recommendations is intended to limit this only to industrial supply, but this was simply one example of what might be accomplished. But what we are after, we think, Mr. Givens, that this type of policy might be needed in about eight or ten years, and if it is needed within that time frame we think that the next couple of years spent in identifying what type of enabling legislation might be necessary would be a very useful expenditure of our time and interest.

COMMISSIONER GIVENS:

One other question that I was wondering about is, if memory serves me right on the Sabine project, the individual users provided their own treatment on it, and the state simply provided the viaduct, if you want, the canal system.

MR. OWEN:

I believe you're right. I don't know the details of that, but I will say this, that since this initial recommendation was made on March 5th, there have been informal meetings of user industries in this parish that have come forward and considered various means on their own of providing the treatment. But not all of the industries that are affected have access to the river. Not all of the industries that are affected would have access to existing water treatment facilities which they may enlarge, and so we still believe that among other things this type of approach might be one possibility. It's not intended to be a universal approach by any means.

COMMISSIONER GIVENS:

I was concerned about, there's some provisions under state law about not spending public money for private good type of a situation, and as well as how the infrastructure and distribution system would be arranged from that, but I don't want to take up a lot of the Commission's time today talking about it. I'd like to visit with you sometime and talk about it.

MR. OWEN:

That's fine, and what I hope is that the Commission will authorize such a feasibility study to address and explore those exact kinds of problems that you mentioned.

COMMISSIONER ZAUNBRECHER:

I guess my concern was, is this outside the scope of our authority. I understand what the project would mean. I had assumed that we were a policy part of it. And that's my question to you, Karen, or to Mr. Boudreaux.

COMMISSIONER GAUTREAUX:

And I guess that was going to be my question as well. I don't -- I think the Commission could

encourage, and if we had the budget and ability to commission a feasibility, but I really don't think a detailed feasibility is within what we would be able to do right now. I think we can look at the statutes, but I think this sounds like -- and I guess I want to hear from some other members of the task force as well, this sounds like a policy recommendation that we would include and say we think this could be a tool as opposed to having a detailed report by the time our work is done.

MR. OWEN:

I think you may well choose to do this as pure policy, but I think it's necessary finally to identify absent policies, missing policies. It would have to be enabled. There are statutory authorities that are completely lacking in any statutes that I'm aware of that would have to be authorized before an approach like this, whether it's purely industrial, whether it's purely agriculture or in fact, whether it's a mixture of industrial and public supply authorities could be accomplished.

One of the things that I had hoped this might be accomplished -- that this might accomplish is the Commission might consider letting an authority like the Capital Area Ground Water Conservation Commission simply enlarge its existing statutory authority to accomplish such an item. That might not be the best vehicle for it, or the Sparta Ground Water Commission for that matter. But we are presenting to you instead an opportunity, I think, to address an area which will be urgently needed within the next decade.

COMMISSIONER GAUTREAUX:

Linda?

COMMISSIONER ZAUNBRECHER:

I think we all agree, and that was my only question, and the other thing about using the river water there, those others who are interested in diversions of other kinds and that could get water where it's needed for agriculture, and I know that's what you are referring to, but I really still think that we need to be policy development rather than developing a project of any kind.

COMMISSIONER GAUTREAUX:

I would envision that this concept, Mr. Owen, be folded in if the Commission decides to do so in the policy considerations and the recommendation we make for comprehensive policy. That's not to say some preliminary examination of the statutes couldn't take place, but I think maybe separate legislative recommendations or authorizing feasibility studies of that nature are probably beyond what we're going to be able to do in the time we have. I don't know, actually. I mean, I think we do have to keep, in terms of policy, the comprehensive statewide policy in which this could be one of the components we address.

MR. OWEN:

The reason -- and it's not my intention now to argue with you, Karen.

COMMISSIONER GAUTREAUX:

I want to hear from the other Commissioners and Task Force members too.

MR. OWEN:

The reason that we have brought this to this Commission and have addressed it and couched it in such a way is because it occurred to us during our preliminary study as a committee that it is not possible to identify policy questions without coming to grips with some of the physical details posed by such a project. That's the only reason that we -- and until you decide what the elephant looks like, it's awful hard to build a trap for it.

COMMISSIONER GAUTREAUX:

Any other Commission members? Fulbert?

COMMISSIONER NAMWAMBA:

Yes. This is how I'm understanding the situation, is that he is telling us this is the elephant, these are its characteristics, it will be treated like this; we do not have a policy in place on how to treat the elephant, if the Commission can recommend a way it should be done on treating the elephant. And we say we cannot give the medicine, but we can say, yes, we recognize that you have an elephant, it has problems, and a framework should be done on how to address the problem of the elephant. That's how I view it. Is that correct?

MR. OWEN:

I was not able to see you during part of that. I think I heard most of that, and I would -- from what I heard I think I agree.

COMMISSIONER GAUTREAUX:

Mike, did you have something to say?

COMMISSIONER TAYLOR:

Mr. Owen, did the Task Force consider private sources of water access capacities in existing plants as part of their consideration in coming up to this recommendation, and is there a backup rationale for us to read with some more detail to help us understand how you came to this particular recommendation?

MR. OWEN:

This is intended to be an example only, and since the Task Force originally broached this subject on March 5th there have been a number of meetings between public supply and using industries in this area. In fact, one industry has suggested that it intends -- a heavy user of industrial groundwater has stated that they intend to be completely out of industrial groundwater by 2004. Another industry has stated that they would be glad to move to a different strata, but they don't intend to move out of groundwater. And a third major industry is still studying the problem.

We certainly -- we don't mean to imply, Mr. Taylor, that if a consideration of a public enabling of such a water treatment facility or transmission facility were done that this would preclude private supplies, for instance, the industry that I was talking about being completely out of groundwater was the Exxon

refinery by 2004. Exxon already has a major water treatment facility on the Mississippi River, and withdraws a very large amount of water, and there is no intent or implication that that's not the best way to go. I think probably it is.

But the problem is is that where there is an economic incentive to continue using groundwater because the groundwater is simply cheaper, it's awfully hard to say, well, just let the using industry use surface water because that is not an economic solution to the problem. So we're really working to approach an economic solution that doesn't economically disadvantage the using industry with an existing vested interest in that groundwater that they are withdrawing.

COMMISSIONER TAYLOR:

Is there a document that we can read and get more detail?

MR. OWEN:

The document is simply -- we have the example, which has been in the form of a PowerPoint presentation that I think has been made available to you, and I don't know if you've received it or not. I have a summary of that before me today, which I'll be glad to give this Commission a copy of, but I have no detailed multipage document.

COMMISSIONER GAUTREAUX:

And, Mike, I don't know if you did, I happened to have an older hard copy, but I did have problems with the electronic copy. I don't know if anyone else -- that may have happened to them as well, but we'll make sure.

I guess my inclination is right now, because I guess the word feasibility study conjures up images related to other hats I occasionally wear, I'm a little reluctant to ask the Commission to endorse a feasibility study when we don't exactly know the parameters. I'm very much in favor of examining this as a policy tool. I guess what I would like to do, if we can do it between now and the next meeting, is maybe get together and carefully review your document and maybe come up with a little more specific description of what the Commission could consider, if the Commissioners are available or are agreeable to doing that, get with staff, get with Mr. Owen, and maybe convene one more go around of the Public Supply Committee and refine the concept. Because I think people are supportive of exploring alternate funding sources, water sources, and tools that may allow people to use those.

MR. OWEN:

Well, I'll be glad to do anything the Chair wishes, Madame Chairman, but I will leave you with these two questions, and that is, if this Commission is not able to consider an alternative means of making surface water supply available to replace ground water then who in the state is. And my second question is, if not now, when.

COMMISSIONER GAUTREAUX:

I agree that we need to be able to look at alternative sources, but I guess what I am sensing is a reluctance to endorse a blanket recommendation for a detailed feasibility, and also what's going to be involved in a legislative search, how can we accomplish it accurately. I'm not sensing disagreement with what you're trying to do. I think it's the specific thing that we're being asked to authorize that there's a little confusion on, and that's what we'd like to clarify.

MR. OWEN:

Any way that we can be of any service in doing that we would be delighted to do so.

COMMISSIONER GAUTREAUX:

Does anyone feel differently? Fulbert?

COMMISSIONER NAMWAMBA:

I just feel if you can give us enough information to glean and look at it in detail so that we know where our scope is, and once we know where our scope is, then proceed on from there after looking at it in very good detail.

COMMISSIONER GAUTREAUX:

Are there any other Task Force comments on this particular item? Again, I apologize for not being able to be with y'all this morning. I know it was an interesting discussion.

COMMISSIONER BOLOURCHI:

I have a comment in regard to Sabine River compact, which was built in late '79 or '80s. There's a gentleman, Barton Ramsey, if you need any information, he would be glad I'm sure to come in and give us a presentation. Also a member of the Task Force. I could provide you with a phone number. I think that Sabine River Authority has been really a success, a win-win for everyone, especially the ground water, the industry, farmers and everyone else.

COMMISSIONER GIVENS:

Karen, I appreciate the comments that you made, and I really want to thank Mr. Owen and his committee for bringing that information forward. I've been watching the water use on the river in this area for a long time, and I think that Gene is 100 percent on target. And we ought to look -- I raise the same question, if not us, who. I think we need to move forward on that as quick as we can.

COMMISSIONER SPICER:

When you're looking at that, I think if we can do what Mr. Owen has asked, both parts of his request, then certainly we ought to focus on making sure that we come out with a policy that allows for this kind of activity to go on. I think if we don't do that we have not done much.

COMMISSIONER GAUTREAUX:

Thank you. Thank you, Mr. Owen, and thank you very much for that hard work. You and the Public Supply Committee have had a good effort.

All right. Timothy Duex with the Outreach Committee.

MR. DUEX:

Good afternoon. My name is Tim Duex. I'm representing the Outreach Subcommittee of the Task Force. Our normal chairman, Linda Walker, was unable to be here today and she asked me to take her place and summarize her comments.

The subcommittee submitted a strategy for public information on the Louisiana Comprehensive Water Policy in April of this year, and I trust that you've all had a chance to look over it, and any comments that you might have certainly would be welcome. The Task Force this morning discussed comments that were posted and made some recommendations for changes, for additions, and in a few cases some deletions, and after a brief discussion these changes were voted on and adopted, so that we can consider this now a final product. I will make those changes and e-mail them to you so that they will be available.

If you wish at this time I can go over in detail the specific changes. I don't know if you all have a copy of this. It certainly will be available on e-mail.

COMMISSIONER GAUTREAUX:

Tim, yeah, there is a copy, thank you. Can you just summarize the types of changes that the Task Force -- go ahead.

MR. DUEX:

Just a few changes. And if you have the document, on the first page in the first paragraph, the third sentence from the bottom, the last word in that sentence was changed from "preservation" to "conservation" to give a slightly different connotation in that case. On the second page under Part C, "Implementation," Part 1.vi, "Louisiana" was dropped from that particular category and it was changed simply to "Businesses and Industries," to eliminate any reference to any possible confusion in that case.

In the same section, Part xiv, "Religious Congregations" was kept as it is, although we debated whether or not to change that. It was considered to be proper as it is. Again, in the same section, Part C.2 under i. "Websites," we had a slight error in No. 1, the Website as it should be properly listed is LSU AgCenter, and I believe AgCenter is all one word. In addition to that same subpoint i. under Websites, No. 4, "DOTD Water Well Registration File" was deleted because that is supposedly part of the DOTD Water Resources Section. So we replaced it with Water Resources Section. A similar change to the LSU AgCenter was made under Part ii., and it was noted that the DOTD Water Resources Section was included under Part 2.3.

The final change was made under part iii., and it was noted that we should add the U.S. Department of Agriculture as a site where we could get specific materials. Again, the changes were debated and voted on, so we can now consider this a finalized report which I submit to you and will submit the changes as e-

mail. I'd be glad to answer any questions.
COMMISSIONER GAUTREAUX:
Any questions from our Commissioners or comments? I know y'all have worked long and hard on this and it's much appreciated. I think what we had discussed at our last Commission meeting was the adoption by the Commission, if there's agreement, of this Outreach strategy. Comments or questions? (No response.)
Do I hear a motion?
COMMISSIONER GIVENS:
I'd like to make a motion that we adopt.
COMMISSIONER GAUTREAUX:
Second?
COMMISSIONER ZAUNBRECHER:
Second.
COMMISSIONER GAUTREAUX:
Linda has seconded. All in favor. I'm sorry. Mike?
COMMISSIONER TAYLOR:
On your long-term recommendations you've got it's essential the final legislation include funding. Do we know what it's going to cost?
MR. DUEX:
No, we did not identify the cost on that. I believe a couple of the subcommittee members were working on the cost but it not been finalized.
COMMISSIONER TAYLOR:
But you plan to get us something in time to --
MR. DUEX:
Correct.
COMMISSIONER BOLOURCHI:
Under 2.4 did you say that the DOTD water well registration data file was omitted, or just the name was changed?
MR. DUEX:
The file was changed to "DOTD Water Resources Section," which evidently includes water well registration data file.
COMMISSIONER BOLOURCHI:
Thank you.
COMMISSIONER GAUTREAUX:
Any other questions or comments? (No response.) We have a motion and a second. All in favor? (Aye.) Any opposed? (No response.) Thank you.
We're going to go back to our report from C.H. Fenstermaker. Bruce Darling.
MR. DARLING:
Because of the changes we have had to make here the resolution will not be quite as good as we want. The last time we were here a couple of weeks ago I talked about some of the issues that are of significance here with respect to water planning in Louisiana, specifically issues relating to water rights. Today I want to look at some of the more technical issues that the Commission will have to address, specifically related to the Sparta Aquifer, and then a brief comparative look at the Southern Hills Aquifer in order to understand what some of the issues

are driving the groundwater management program in Louisiana, and how the Commission and others would probably want to look at identifying criteria for critical areas. And I have comments of my own to make about some of these as well.

As I say, we wanted to start off looking at the Sparta Aquifer and to give you an idea what the conditions are in the Sparta Aquifer, it's constructive to back up to as far as we can using the earliest maps possible to see how things have changed in the aquifer over a period of 100 years. The U.S. Geological Survey published an Open File Report on the Sparta Aquifer in 1980. The Open File Report included a potentiometric of the Sparta Aquifer. Let me explain first, the Sparta Aquifer is an aquifer that, over most of it extent, is a confined aquifer. We've talked about aquifers a lot during the course of this management program, and I've used terms like confined aquifer and unconfined aquifer. I don't know how well those terms are understood, and so I thought that I would put some illustrations up here to help those of you who might not have an extensive background in hydrogeology understand a little bit about the types of aquifers we're talking about because what I'm going to talk about later on with regard to the Sparta and the Southern Hills presupposes some understanding of the difference between a confined aquifer and an unconfined aquifer.

This is from a USGS Website showing -- a little cartoon from a USGS Website showing the difference between a confined and an unconfined aquifer. I have a full screen over here and this image is being truncated for some reason or another, so I'll have to explain what you're looking at here. But this is a slice through the earth, and what it shows is that you have here two types of aquifers, one an unconfined aquifer and a confined aquifer down here. The difference between these two is that a confined aquifer is open to the surface, is open at the surface, and you get infiltration directly from the surface down to the saturated zone. This is the saturated zone, and the point at which you have full saturation of the aquifer is what you call the water table. I know we've all heard the term water table before, but this is what the water table is. And the term water table refers specifically to that surface in an unconfined aquifer. A confined aquifer is one that is separated from the surface or from other aquifers by a relatively impermeable unit here which we call an aquatard or a confining layer. The aquifer is exposed up here at the surface. This would be the recharge area, and so water enters the aquifer here, then flows down through these confined sands. Here is the upper confining layer and the lower confining layer. And as the water flows down through here the sands become fully saturated, and pressure builds up in the aquifer so that wells that penetrate this aquifer might have a water level that is higher than the top of the aquifer here.

What this shows is that you have two wells that penetrate this confined aquifer down here some distance from the recharge area. The point at which the water would rise in a wellbore represents what we call the potentiometric surface in a confined aquifer, and that's a result of the pressure head in the aquifer. This shows water flowing from a well, and so this would be a flowing artesian well. Artesian is a term that refers to the tendency of water to rise in a wellbore in a confined aquifer. Artesian doesn't mean it flows, it just means it rises above the top -- the base of the upper confining unit. A flowing artesian well is one that flows at the surface.

Here is another well completed in the confined aquifer. You see here that the well -- the water in this well rises to a higher level than even the water table aquifer right here, so the artesian response brings this water level up here so the potentiometric surface measured in this aquifer is at that level. So we really have two surfaces we're talking about, two types of aquifers, confined and unconfined; in the confined the surface we're concerned about is what we call the potentiometric surface, and in an unconfined aquifer it is the water table.

Looking at the Sparta Aquifer, again, I have to apologize for this resolution, but this is one of the prices we've had to pay for the problems we've had today, this is taken from the USGS Open File Report written in 1980. This shows the elevation of the potentiometric surface as measured in the year 1900, so this goes back 102 years. You might also consider this a predevelopment surface of the aquifer. These lines right here are what we call equipotential lines, and they represent lines of equal elevation. This elevation right here is estimated to be somewhere around 300', and it decreases from west to east to about 100'. It's actually -- in groundwater hydrology we know that groundwater flows from what we call areas of high hit to areas of low hit. Since these are your areas of high hit over here and these are your areas of low hit, the groundwater will flow from this direction down there, in this direction to that direction, and so on and so forth, typically at right angles to these equipotentials. So you see that 102 years ago the surface of the aquifer was -- it did slough off toward the east, but it was in a relatively regular fashion.

Step forward in time 80 years. This is from the consulting report put together by Meyer, Meyer, LaCroix and Hixson. These are the contour lines representing the potentiometric surface of the aquifer in the year 1980. This is the recharge area as shown by Meyer, Meyer, LaCroix and Hixson, based on work done by the U.S. Geological Survey. I have drawn on here these blue lines which are flow lines. And what you see here is that by the year 1980 we had what were called cones of depression that formed in the aquifer. There's a large cone of depression in Ouachita Parish and another large cone of depression in Union County, Arkansas.

Instead of sloping uniformly from west to east across the area, now you have a trough that has formed here, a northwest trending trough that's formed in the Sparta Aquifer. This elevation rate here is about -- well, here you're at -50' above sea level. So at -50' below sea level, this line is sea level, this line is 50' above sea level. So here you have your low points here beneath Ouachita County -- Ouachita Parish, Louisiana, and Union County, Arkansas.

The flow lines show you that as these cones of depression have formed you've reversed the potentiometric gradient here, and now water flows under a forced gradient in this area not from west to east but from east to west for these major discharge points. So these are discharge points that have been superimposed on the aquifer as a result of the pumping over a period of 80 years.

Step forward in time another 21 years to the year 2001 and you see that the cones of depression have deepened somewhat. We now have the cones surrounded by -100' contours on down to the deepest set, about -150, and you see a more definite trough that's formed in the surface of the Sparta with another cone forming right up in this area. So the progression has been over a period of time to one of more definitely formed cones of depression with a trough that appears to have expanded out as a result of or formed as a result of the coalescence of these cones from Arkansas and north Louisiana.

Now, this map shows areas where the drawdown in the Sparta Aquifer is below the top of the Sparta and areas where the drawdown is greater than one foot per year. This marks an area right here where the drawdowns are below the top of the aquifer, and this over here marks an area were drawdowns based upon hydrographs show that the drawdown is greater than one foot per year, typically, as it is over here as well. This line right here, we're going to talk about this a bit more because we're going to try to put together all these issues in the Sparta so that we can understand what the basic issues are. This represents the downdip limit of usable quality water in the Sparta as shown in the MML&H study. So up here you have basically fresh water, and as you get back down here the water is a higher TDS water that is a potential problem in the Sparta, I'll explain why a little later.

Why are you seeing these drawdowns in a potentiometric surface? This is a little diagram that shows what happens when you put a well, you sink a well into a confined aquifer and begin to pump it here. When you complete a well in a confined aquifer you're actually creating a pressure sink, and when you create that pressure sink you allow for the expansion of water, and also for the expansion of -- for the contraction of the inner granular matrix that the water is held in, the aquifer. So what happens is that water under compression -- under pressure will compress, it is compressible, and so you open your well up and that

water begins to expand under pressure, and then as it expands also you get a compression of the skeletal matrix of the aquifer and you get this artesian response.

As you put a well in the aquifer and begin to pump you help it by pumping more water out then, and this will be your pumping well on this diagram, you begin to draw the water table down. This is your confining layer up here in this diagram, and down here these are the sands, the saturated sands. In this case the potentiometric surface, the original potentiometric surface is up here. As you begin to pump the well you create what we call a cone of depression which pulls this potentiometric surface down to this level. You are not at this time drawing any water from the unconfined storage down here in these sands, you're drawing water from what is called your specific storage or from the ability of water to expand in the aquifer.

What happens when you put more wells into your aquifer and you've decreased the spacing between your wells? Each well has its own cone of depression, and each cone of depression will fan out and intersect with another cone of depression, and as this happens then you get a coalescence of these cones and then you get a composite drawdown surface which pulls the potentiometric surface down lower than you would get if you had one or just a few wells in your aquifer. As you increase the number of wells pumping from your aquifer, then you increase the probability that you're going to have a coalescence of these cones. And then you get over a period of time as these wells pump, as more and more of these wells pump for longer and longer periods of time, these cones of depression that form as you've seen in the Sparta and other confined aquifers. This is not unique to the Sparta. We find this in confined aquifers all over the country.

One of the issues in the Sparta, I pointed out an area on the map put together by MML&H showing areas where the potentiometric surface had fallen below the top of the Sparta, that is below the base of the confining layer, and this is a diagram showing what happens here. In this diagram we have a confined aquifer with the original potentiometric surface shown to be up here. Over a period of time the potentiometric surface has been pulled down below the base of the confining layer right here, and as a result of this the aquifer now in this area is no longer confined, it's actually yielding water to the well under unconfined conditions. So water is now being pulled out of the aquifer, not as a result of the expansion of water or the release of pressure but from the lateral flow of water to the borehole and the gravity flow of water through the granular matrix of the aquifer. And so you begin to look at a very different type of flow regime here when you have unconfined conditions. When we analyze flow in confined aquifers we don't analyze it the same way we

do in unconfined aquifers.

Well, how do we trace the conditions that have developed in the Sparta over a period of time. And, again, I apologize for the truncation on this. But hydrographs constructed from U.S. Geological Survey data over a period of time allow us to see what happens at a given well over a period of time. A hydrograph is a very simple graph that allows us to trace changes in a property of water at a point over a period of time. In this case the hydrograph is chasing the change in the elevation of water below the surface or with respect to mean sea level in these wells. There are eight hydrographs shown on my screen over here, and only four here and four others truncated over here, spread out across the Sparta Aquifer. And what we see happening in the Sparta is the following: in Webster Parish, Well WB, or hydrograph WB-399 shows, and this is right in the recharge area, or very close to the recharge area, that -- and this is in depth below the surface, the top of the Sparta in this well is at 38 feet below the surface, but you see fluctuation in here from year to year and from season to season. This is very characteristic of the response in a recharge zone or near a recharge zone. As you get water coming in from one season to the next you get this fluctuation of the water level, and notice as well that you're not seeing -- you're seeing fluctuations of about two to three feet. The fluctuations really aren't very much, but over the length of time shown on this graph you really don't see an upward trend or a downward trend. It appears to be fairly constant.

However, as you move off into Bienville Parish, what you see is in well BI-144, which is the northeastern most Bienville Parish, falling water levels over a period of some 32 years. The top of the Sparta in this well is at 216' shown right through here. As you get off in the beginning of the sequence here the decline was three feet per year. This decline up here was entirely a result of lowering of the potentiometric surface. From about 1978 on through about 1984, the decline looked liked this, at about two feet per year, and it appeared to be fairly constant down to this point, and then once it got below the base of the Sparta you began to see a lot of perturbations of this potentiometric surface here, possibly a result of dewatering or leakage from this confining layer up here.

Over a period of time the potentiometric surface has continued to decline, but it's declined at a decreasing rate. There are a number of reasons for this, possibly. One might be the rate at which the well is pumped. Another reason might be that you're getting leakage from these overlying layers, so as a result of lowering the potentiometric surface below this confining layer up here, you've actually had the potential for leakage, or some vertical leakage or recharge to the aquifer from above.

Moving on into Lincoln Parish, not too far from

Ruston, is Well L-26. Well L-26 you see the top of the Sparta is at 120' below surface, and you have this decreasing potentiometric -- the decreasing water level over a period of time, but it's decreasing at a decreasing rate, as you see from the previous hydrograph. So the hydrographs don't shown just a straight drop-off. They show a tendency to decrease over a period of time for a number of reasons, and I think possibly one of the reasons is a result of leakage or recharge from the overlying layers.

Farther off into Ouachita Parish, Well OU-444, you see a similar pattern here. All of this decline in the potentiometric surface -- all this is a decline of the potentiometric surface. This represents nothing occurring in the saturated section of the Sparta. So you start off up here at about 2.2' per year about 1970, and then it decreases to 1.5' per unit, and then it increased to 3.2' per year. And if I could show you this area right out here, right at the top of the Sparta you would see it flattening out at this point. So when you get out into Ouachita Parish you really haven't begun to see any of the dewatering effect out there.

Well, this leads into issues related to Sparta Aquifer quality. When you're looking at groundwater management you're concerned about the availability of water and the quality of water. The graphs I showed you earlier relate to our ability to try to understand what might be available short term and long term in the aquifer. There is concern that if you lower the potentiometric surface of the aquifer enough that you might decrease the amount of water available in the aquifer making it less possible for the aquifer to yield the water necessary -- needed. That's one theory.

The other theory is that you may have -- the pumpage may have an impact on water quality as follows. The Louisiana Department of Environmental Quality conducts a series of baseline -- a baseline monitoring project in Louisiana over a three-year period. The state is divided up into regions, and over a period of three years each of the regions are sampled for a number of constituents; dissolved solids, organic constituents, and in the past radiological components.

If you're looking at indicators of water quality, two of the indicators you're concerned about in the Sparta are total dissolved solids and chloride. From the year 2001 the Commission or the LDEQ showed that total dissolved solids, and I have to apologize for this resolution, but total dissolved solids in the Sparta increased from west to east. Now, this is to be expected. This is entirely naturally occurring. We know that as water enters an aquifer and moves through the aquifer matrix and remains in that aquifer over a long period of time and is in contact with material in the aquifer it dissolves material, it dissolves rock material, and as a result of its contact with the rock

material then the total dissolved solids contents increase entirely as a result of natural processes.

In the case of total dissolved solids you see that total dissolved solids increased from about 200 milligrams per liter here on to about 800 milligrams per liter back and 1000 milligrams per liter back here. The U.S. Environmental Protection Agency recommends that 500 milligrams per liter total dissolved solids is an acceptable secondary drinking water standard for groundwater. It's important to understand that this is a secondary standard, not a primary standard. A primary standard relates to or attempts to define the concentration of a substance in groundwater, dissolved constituent of groundwater that has a direct or indirect effect on human health. The secondary standards relate to the occurrence of dissolved solids that have an impact on the aesthetic quality of water; the taste, the smell of water, the appearance of water. In a large part these are unenforceable in the sense that the primary standards are.

Now, the experience has shown and many state environmental agencies agree that instead of 500 milligrams per liter that 1000 mg per liter is an acceptable concentration of total dissolved solids for humans over the long term. And as you look back over here on this map, the 1000 milligram per liter line is right over in this area to the west-southwest of West Monroe. Similarly, you see that the chloride concentrations in the Sparta Aquifer also increase from west to east. This is consistent with what you see for total dissolved solids and other dissolved constituents at groundwater here. The recommended secondary standard for groundwater -- for chloride is 250 milligrams per liter, which runs right about over here. Now, there are areas up here where chloride is a lot higher back up in this part. In this area it's almost 400 milligrams per liter, and it rises to 500 or more milligrams per liter as you go farther off to the east.

So what you see in the Sparta Aquifer is that as this water flows from west to east that the total dissolved solids contents increase, the chlorides content increases. This is all naturally occurring. Well, why is this something that people need to be concerned about? If you consider that pumping in this area has created cones of depression here and reversed the gradient, there is an argument that can be made that with the lowering of the potentiometric surface and reversal of the gradient that you've made it possible, you've not assured yourself but you've made it possible for this higher TDS water back here, this high chloride water to migrate from east to west, and possibly get into the freshwater sands here in the easternmost part of the Sparta Aquifer somewhere in the vicinity of West Monroe. The concern is that as that happens, then that forces the City of West Monroe and other industries that are in need of fresh water for one process or another have to resort to other sources,

look for other sources of water, or to perhaps decontaminate water, or to mix high TDS water with low TDS water or to go entirely to a source of surface water in order to replace this water right here. And so the concerns really are that as you lower the potentiometric surface you may make water less available over the long term, and as you decrease the potentiometric surface you also reverse this gradient and make it possible for this higher TDS water to be pulled into the freshwater sands of the Sparta.

Well, what are some recommendations or suggestions about critical area criteria for an aquifer such as the Sparta? I've looked at this a great deal and talked with a number of people about this, and I admit I have some reservations about some of the recommendations I've heard regarding the area of a critical area designation. And I would make the following recommendations, at a minimum, to begin discussion on what we would consider to be reasonable critical area criteria for the Sparta or for any other confined aquifer. One would be to consider the rate of decline of the water level in the saturated zone. Or just the rate of decline of the potentiometric surface and the rate of decline of water in the saturated zone if you are below the top of the confined section.

The second then would be, as a corollary to that, would be to consider the remaining thickness of the saturated section. Now, a foot of decline per year or two feet of decline per year might sound like a lot of decline, but if you have 600-700 feet of saturated section below you at that point, then a 1 to 2 foot decline per year might not mean that you're close to approaching critical conditions yet. It means that you have a potential problem that you want to look at, and I think that it also means that you have perhaps some time to consider appropriate courses of action that are reasonable and economically efficient in order to address those problems.

The third might be to look at the potential for decreasing well yields. I've noticed in other areas where we have had rapidly decreasing or dewatered aquifers, especially in West Texas, that well yields will drop off significantly. And that is as water falls below the screen of the well, then there's less area of intake in the well, and so there's less water to be pulled into the well, and as a result of that then the well yields less and less water over a period of time. This is something that needs to be considered as well, what is the evidence of decreasing well yields in the area. Also, as you get decreasing well yields you may also expect to have increasing lifting costs. So this also needs to be considered. As your lifting costs increase, many times you have to shut down wells or you have to drill wells to deeper horizons in order to get the water that you need.

Lastly, probably the most significant of this criteria for the Sparta, and for the Southern Hills as we're going to see in a minute, is evidence, direct

evidence of the migration of high TDS water. With regard to the Sparta, let's go back to that map of chloride concentrations. On this map I've drawn some arrows here to show you what I think needs to be done. Right now the well control in the Sparta is fairly well spread out where they need it the most.

What is really needed right now is to have a series of closely spaced monitoring wells in the Sparta that allow whoever is going to manage this program to track changes in the -- increase or changes in total dissolved solids and/or chloride concentration over a period of time. There is no direct corollary between the lowering of this potentiometric surface and the increase in total dissolved solids. There is the potential for that, but what you need right now is hard evidence that this is in fact occurring.

It's difficult to substantiate this right now, because as I said, the wells that are out there are spread too far apart. The wells need to be much more closely spaced along very definite flow lines in order to track the changes in total dissolved solids and chloride. And then as you see, you need to monitor this on a regular basis, and then as you have evidence of the increase of chloride concentration in wells along these flow lines, then you actually have something that will substantiate or will support the argument that you do have the encroachment of saline water in your aquifer.

At this point, and this is one reason that in all fairness to the Sparta Commission, one of the three criteria that they recommended for critical area designation was the increase in total dissolved solids or chloride concentration, but they recommended in a memorandum that this criteria not be applied right now because of the lack of data. I'll tell you that I think this is probably one of the most important criteria here that you can look at in the Sparta or any other aquifer in order to argue that you have potentially critical conditions developing, but without the information here at hand you really can't make the argument.

I think you have time. Ground water doesn't flush through the subsurface in the form of an underground river. It flows very slowly, even under the forced gradient of these wells here. And I think it's not likely that you're going to see a dramatic change in this overnight. Therefore, I think it's probably in the best interest of all concerned here to consider installing monitoring wells along a couple of transects up here in order to track this.

Let's jump down here to southeastern Louisiana and look at what we call the Southern Hills Aquifer. The Southern Hills Aquifer, of course, is the primary source of water for the Baton Rouge area and the Florida Parishes as well. We call it the Southern Hills Aquifer. Really what it is is a combination of three other aquifers. In southwestern Louisiana the major aquifer in that area of the world is known as the

Chicot Aquifer. It overlies what is called the Evangeline Aquifer, which in turn overlies the Jasper. Those aquifers have their equivalent in southeastern Louisiana. They are lumped together in what is called the Southern Hills Aquifer system. What you see here in southeastern Louisiana is a number of sands that are innerbedded with clays from near the surface on down to depths of 2800' or greater. The shallower sands down to about 1500' or what we call the Chicot equivalents, from about 1500' down to 2000' would be the Evangeline, and then from 2000' on down would be the Jasper. So this -- and I would like to have shown you a cross-section of the Sparta. It was not available yet. The U.S. Geological Survey is in the process, very close to releasing a report which includes a cross-section such as this for the Sparta.

If you could look at the Sparta you'll see that the Sparta is a more massive aquifer, although it's innerbedded with some sands, innerbedded with clays, as we see here, but in the Southern Hills area or in the Baton Rouge area, the Southern Hills Aquifer system consists of, as I said, a number of individual beds isolated from each other by these beds of clay overlain by a bed of sand that runs all the way back up, far into Mississippi. This is the City of Natchez. This is the Mississippi-Louisiana state line. This is East Feliciana Parish. Here is Baton Rouge right here. Back over here is LSU. And here is a feature we call -- this is very important for understanding the conditions in the Sparta -- excuse me, the Southern Hills. This is what's called the Baton Rouge fault. These sands dip off toward the gulf and they are truncated here by this fault. This is what is called a down-to-the-south normal fault. And it's exposed here very near or at the surface in Baton Rouge.

What that fault does, and this is important for understanding the issues in the Baton Rouge area, and how to make a comparison between what's going on in this area and what you see in the Sparta, is that that fault offsets these sands in the Southern Hills to the south by a couple hundred feet, they're dropped down by a couple hundred feet. So the sand here north of the fault occurs 200 to 300' lower south of the fault. So it's out of direct communication with the equivalent sand on the north side of the fault.

To the south of this fault right here most of the water in these sands is pretty saline water, high TDS water. The water up here north of the fault is mostly fresh water, is recharged back up here across this area of southern Mississippi and the Florida Parishes of Louisiana, then it migrates down here through these sands and it maintains this pressure in these sands so that when you drill a well into one of these sands what you get is a huge artesian response with some of the potentiometric surfaces rising many hundreds of feet above the tops of their respective sands in this area.

Well, pumpage in this area -- forgive these maps,

I had to scan these in hurriedly this morning because of another problem that developed -- this is the potentiometric surface for the Chicot equivalent in the Baton Rouge area, and what you see here is that you get -- this little circular feature right here, this represents the cone of depression forming around Baton Rouge from all the pumpage here, and that's in about the 600' Sand. If you move on down to about the 1500' Sand you see a greater cone, a larger cone of depression forming here; when back over there, water again is recharged back up here and it flows from north to south. This is the Baton Rouge fault about right through here. As you get down to the deeper portions of the sands here in about the 2000' Sand you have this much larger cone of depression forming here. And so as you've seen in the Sparta Aquifer here in the Baton Rouge area the pumpage from the respective sands has caused these cones of depression to form here.

What's interesting about this area is that the proximity of the heaviest pumpage -- the heaviest pumpage -- some of the heaviest pumpage is in a relatively close proximity to this fault right here. Now, remember, I told you when you pump a confined aquifer you create a pressure sink. And in the case of the Baton Rouge area that pressure sink is fairly close to the fault. And so there's a pressure differential from south of the fault to north of the fault. As you lower that potentiometric surface over a period of time you lower the pressure in that sand, and that pressure differential from north to south actually induces or allows higher TDS water from south of the fault to migrate upward along that fault and to enter the freshwater sands in the Baton Rouge area.

Shown here are the different sands in the Baton Rouge area, the 600' Sand, the 1500' Sand, the 2000' Sand, and a deeper sand here, the 2800' Sand, all of which to one degree or another have been impacted by the flow of water north of the fault as a result of this pumpage. This is one of the -- Well EB-917, a monitoring well maintained by the Capital Area Ground Water Conservation Commission. This is from the 1500' Sand. What you see here is that over a period of about 27 years the potentiometric surface in that sand has fallen from about 120' below surface down to around 160' below surface. But you see substantial variation in the potentiometric surface here. At this point you're not anywhere close to the top of that sand. But having lowered the potentiometric surface that much in that well and that much in other wells that penetrate the 1500' Sand in the Baton Rouge area is enough to create and maintain this pressure sink to allow for this flow of water north of the fault into the Baton Rouge area.

The U.S. Geological Survey has traced the movement of the water north of the fault. This is what we call the trace of the fault. If you're looking at this in Map View, the line that the fault would form on the surface is called the trace of the fault. This is the

upthrown side of fault, this is the downthrown side of the fault. The different colors here show you that to the south of the fault you have primarily saline water, north of the fault you have primarily fresh water. What this shows is a plume of saline water in 1500' Sand that has migrated up into that sand. And over a period of some 35 years, I think the earliest measurement was sometime around 1965, 1966, and that would be this little plume right here, between that time and the mid-1990s it moved northward across -- northward into the Baton Rouge area threatening to reach some of the wells up here north of the fault, the water supply wells of the City of Baton Rouge. The Capital Area group has put together a program to monitor and maintain or to manage this by managing monitoring pressures on both sides of the fault and recommending reasonable pumping levels north of the fault in order to decrease the stress, especially in areas of close proximity to the fault, in order to reduce the potential for this northward flow of water.

Well, both cases, the Sparta and the Southern Hills Aquifer here, and especially the 1500' Sand, a real critical issue to me is, again, the saltwater issue. Looking at the hydrographs themselves is no real indication that you have a specific problem. It's an indication that you may have a problem, but you need to be able to tie that back to something else, such as saltwater encroachment, in order to be able to pinpoint an area where you have a problem or a specific problem. And in this case we know that as you reduce the pressure in the sands north of the fault that you have this migration of saltwater to the north.

This is not uncommon in areas where you have saline water separated from fresh water by a fault and pumpage in close proximity to the fault, as you do here in Baton Rouge. In the case of the Sparta it's not quite so clear because you don't have a fault that separates the saline water to the east from the fresher water to the west. And so there's not this abrupt pressure boundary from east to west. And that's why I think in the case of the Sparta it's important to have a series of monitoring wells that allow you to track that movement of saline water. Here there are enough wells in the Baton Rouge area to allow the Capital Area Commission and the U.S. Geological Survey and the Baton Rouge Water Company to track this movement very closely.

So I'm going to leave it at that at this point. I didn't want to go -- I thought about going into some other issues, such as aquifer storage and recovery as a management issue, but at this point I think it's best just to leave it at that, and point out that when you look at one aquifer, such as the Sparta, the issues in the Sparta may be very similar to those that you find in another aquifer; but when you look at the specific conditions that you find in something like the Southern Hills, you might find that although there are

similarities, that it's difficult to make a direct comparison between one and the other, and nearly impossible to have one set of criteria that you can apply across the board to all the aquifers. In other words, when you look at the criteria that you try to apply to determine whether or not you have critical conditions, you really have to do this on a case-by-case basis and on a site-by-site basis. It may be, for example, that even within an aquifer that you would have variable criteria depending upon what the specific issues are.

In the case of the Sparta, as you're off on the eastern part of the Sparta, I think the saline water issue is quite significant here. In the case of the Baton Rouge area, saline water is very important here and very easy to monitor. In other areas, well, you have to look specifically at the issues involved and where you are, whether you're looking at a recharge area or whether you're looking at an area where drawdowns have been sufficient enough over a period of time to affect the yields of the wells and the lifting costs associated with those wells. In other words, none of this is very straightforward, and you have to be able to be prepared here to put a lot of resources into determining what does or doesn't constitute critical conditions in a particular aquifer, not only in Louisiana but elsewhere.

To kind of close up here let me tell you where we are. We are in the midst of a major revision of Chapter 4 to include much of what I've shown here for each of the major aquifers in Louisiana, and we're also very close to wrapping up Chapter 3. So we are per our schedule on track but still running at breakneck speed in order to make our June 15th final submission deadline.

If there are any questions about what I talked about or anything else I'd be more than glad to discuss them with you. I e-mailed what I envision to be a rewrite of what Chapter 4 would look like to you guys last, so that would include much of what I was talking about here with regard to the Sparta Aquifer. I got a return from you, Fulbert, because I think your hotmail box would not accept the size of the -- it bounced it back to me. Anyway, if there are any questions, I would be more than pleased to entertain them.

COMMISSIONER LOWE:

Bruce, I'm hearing something here that's been puzzling me too for a good while. Aren't we really looking at critical aquifers or critical locales?

MR. DARLING:

The definition of a critical aquifer, and I discussed this earlier when we first jumped into this, but a critical aquifer or critical conditions could be, as was defined to me when we first started this project, as small as a city block or as large as a county, or as large as an entire aquifer. So a critical area need not be of any specific size. It just relates to the specific conditions within an

aquifer that may or may not create problems of one type or another in the aquifer. So you might have, for example, critical conditions in a parish that might not extend out beyond the boundaries of that parish. And that could be a result of contamination, that could be a result of localized heavy drawdowns, for example, or you could have something, such as in the Sparta, where you might have something such as this, cones of depression that, in the opinion of some people, create a potential supply problem long term as these things have expanded and coalesced to reduce the potentiometric surface.

COMMISSIONER LOWE:

The reason why I say that, Bruce, is I totally agree with you. I have a pretty strong background in hydrogeology, and when I had looked at the Act, and the overall objective was for identification of critical, quote, aquifers, what my concern is is that we really aren't looking at critical aquifers so much as we are critical locations. And your terminology just now hit the head, critical area, whether it be in the Sparta, Wilcox, Chicot, Southern Hills, whatever, it's a critical area of water usage, not so much a critical aquifer, statewide aquifer.

MR. DARLING:

Yes. In other words, to follow-up on your comment here, if you look at the Southern Hills Aquifer again -- well, I apologize for this bad resolution, it wasn't quite that bad when we had this thing started today -- but you see the large cone of depression here in the Baton Rouge area right there. Those problems don't really -- haven't really developed elsewhere. So if you're trying to identify -- if you're going to call the whole aquifer critical because of what's happening right here, then you're really trying to impose a system of management on other areas of the aquifer that might not require the same approach to management that you would have here in the Baton Rouge area. So really, as I understand it, and this is based upon conversations I've had with one of the authors of the bill, that you're looking at trying to identify critical areas which might be as large as an aquifer. So it could be, as was explained to me, as small as a city block, as large as an entire aquifer.

So there's some flexibility in there, and you need to have that flexibility. You don't need to pin yourself down by assuming that because you have critical conditions here or something approaching critical conditions here that you also have critical conditions elsewhere. As you look up here into the northern part of the Florida Parishes aquifer, Florida Parishes, I don't think you see the same problems in that area that you have down here. They may have their own set of problems over the long term.

COMMISSIONER LOWE:

Yes, but -- I appreciate that, and exactly what you're saying is that even with continued growth in that population, in that area or industrial growth in

that area, because of the proximity to the Baton Rouge fault, we have one problem that's entirely different from what would be in the other part of the aquifer.
MR. DARLING:
The location -- the occurrence of the Baton Rouge fault here is certainly a big factor in determining the occurrence of potentially critical conditions in this area, yes.
COMMISSIONER GAUTREAUX:
Thank you, Bruce. Any other comments or questions of the Commissioners? (No response.) Thank you. And I understand what we will be doing is, you'll be incorporating the information that you've presented, I assume comments are still welcome on the new portion, and I guess if someone hasn't forward something to you of concern on the old portion they need to do so. And we're not going to take action today on the report itself because it's incomplete, but we'll get the suggested final draft to the Commissioners and have it available to Task Force members as well before the final delivery date. Thank you.
We've given an opportunity for the Commission to ask questions or comment on the report. Any Advisory Task Force comments or questions on the report itself? (No response.) Thank you.
Our next item on the agenda is the consideration of the extension of the current contract. As you will recall when this contract was first issued through the Department of Natural Resources, Office of Conservation, there was a contract for phase one with the option of extending into phase two. And at this point we would like the Commission to determine whether their pleasure right now in terms of extending or going onto the other option. Tony, did you want to say anything regarding that option?
MR. DUPLECHIN:
You want me to go over what the two options were?
COMMISSIONER GAUTREAUX:
Go ahead.
MR. DUPLECHIN:
The two options were to either extend the current contract for an additional 12 months for up to $300,000, or to solicit another Request for Proposals to complete the work outlined in part 2 of the original RFP.
COMMISSIONER GAUTREAUX:
One thing that I had asked the Conservation staff was to review the Scope of Services and the deliverable submitted to date and determine whether or not they were satisfactory. I don't know if you want to speak to that.
MR. DUPLECHIN:
Yes. Just that we have looked over the original Scope of Services, the addendum that was done to it, the proposal that was submitted by C.H. Fenstermaker and Associates and the deliverable that they have given us thus far, and it is the Staff's recommendation to proceed with extending the contract.

COMMISSIONER GAUTREAUX:
Thank you. Any questions or comments by Commissioners? Brad?
COMMISSIONER SPICER:
I think with that recommendation we ought to -- I make a motion to continue the contract.
COMMISSIONER GIVENS:
I second that motion.
COMMISSIONER GAUTREAUX:
We have a motion and a second. Any discussion? (No response.) All in favor? (Aye.) It's unanimous. Thank you then.
I guess we will go through old business at this point, since we have already done the Advisory Task Force Committee reports. Unless someone has any general questions or comments from the Commission. I'm sorry, we skipped around a little bit earlier. (No response.) Old business.
MR. DUPLECHIN:
The first item under old business is to finalize the language of the brochures. And during the Task Force meeting this morning we had a lot of good discussion on some of the language and the way some of the brochures were presented. So at this time we're not quite ready to have the Commission -- I don't know if they wanted to vote on it or what, but just agree on the language in the brochures, but we will be working on that within the next week to get them straightened out -- well, not straightened out, but get them to where some of them are a little more friendly, reader friendly.
COMMISSIONER GAUTREAUX:
Linda, you had a comment?
COMMISSIONER ZAUNBRECHER:
Yes. My question is, will you send drafts of them to us before the next Commission meeting?
MR. DUPLECHIN:
Yes, ma'am.
COMMISSIONER ZAUNBRECHER:
Revised.
MR. DUPLECHIN:
We'll send revised drafts, and we'll also make them available on the Website.
COMMISSIONER ZAUNBRECHER:
That will be fine. Thank you.
COMMISSIONER GAUTREAUX:
The other two items I see we've already discussed within this meeting, so I guess we can go on to number 4. That item was discussion of the delegation of the critical groundwater area application completeness review determination to staff.
MR. DUPLECHIN:
And at our last meeting I believe it was Mr. Cefalu had brought up the issue of after we get the application in from the Sparta, which should be within the next six weeks, there may not be enough time for the Commission to reconvene just to vote on whether or not the application itself was complete, and suggested

that maybe the Commission give that authority to the Staff to make that determination and report back to the Commission.
COMMISSIONER GAUTREAUX:
Any comments or questions?
COMMISSIONER GIVENS:
I would like to make a motion that we do that. I think it would be appropriate for the Staff to make that determination of completeness.
COMMISSIONER BOLOURCHI:
Second.
COMMISSIONER GAUTREAUX:
We have a second by Bo, motion by Dale. Any discussion? (No response.) All in favor? (Aye.) Opposed? (No response.) It's unanimous. Thank you. Tony, what I would like to see, and I assume we will, is a summary once that determination is complete, just a report back on the parameters that were discussed and evaluation.
MR. DUPLECHIN:
We'll stamp that during our review of that.
COMMISSIONER GAUTREAUX:
Any new business? (No response.) Now we have our public comment and question opportunity. Would anyone from the public like to address the Commission, staff? (No response.)
What we're suggesting for the next meeting is June 19th. That works for everyone? What will happen is we'll get the copies of the report to -- what we're proposing to do is get the copies of the report to the Commissioners prior to that meeting. The contractors will have the deliverables ready by the agreed-upon deliverable date. We'll just meet after that date to discuss and hopefully accept the product. That's the plan. Fulbert?
COMMISSIONER NAMWAMBA:
June 19th, I won't be there. I'll be away the whole week.
COMMISSIONER GAUTREAUX:
Any other Commissioners for whom the 19th is an issue? We're missing quite a few today. We need to meet at some point during that week, and I believe there was an issue with this room. We could certainly find another room if we needed to. This one works out pretty well. What I'd like to do is we will attempt to find a date during that week, and we'll certainly send out a public notice. I'm a little concerned that a number of our members may have conflicts as well, so we'll send out the notice, if that works for everyone, and set the date. We'll poll the members and make sure we're going to have a quorum, but we need to try to target it as closely as we can to that week.
With that, do we have a motion to adjourn?
COMMISSIONER BOUDREAUX:
So moved.
COMMISSIONER GAUTREAUX:
Thank you.

CERTIFICATE

I, SUZETTE M. MAGEE, Certified Court Reporter, do hereby certify that the foregoing meeting was held on May 29, 2002, in the Conservation Hearing Room, Baton Rouge, Louisiana; that I did report the proceedings thereof; that the foregoing pages, numbered 1 through 59, inclusive, constitute a true and correct transcript of the proceedings thereof.

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SUZETTE M. MAGEE, CCR #93079
CERTIFIED COURT REPORTER